

IMPULSIVITY IN CHILDREN:
A FACTOR ANALYTIC STUDY

BY

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Impulse control problems have been implicated in academic performance deficits in children. However, to date, there has not been available a sufficiently reliable and valid method for assessing those aspects of impulsivity which, on an overt behavioral level, contribute to children being labelled as "impulsive." The purpose of this study was to develop a questionnaire to tap a potentially situation specific behavioral dimension of impulsivity. The questionnaire used in the present study was a revised version of the Impulsivity Scale for Children.

Both male and female students in fourth, fifth, and sixth grade elementary school classrooms participated in the study. The Revised Impulsivity Scale (RISC) was group administered to each individual class of subjects. The total sample studied included 450 children. Subsequently, a randomly selected sub-sample of approximately 100

subjects was re-administered the RISC approximately ten weeks after its initial administration. A second randomly selected sub-sample of approximately 100 subjects completed the original version of the ISC. Teachers of children in this latter sample were also asked to rate each child's behavior according to the degree to which it was characterized by impulsivity. Where available, several pieces of demographic data were collected for each child participating in the study. These included age, race, Otis-Lennon Mental Abilities Test IQ, and standard scores on the Total Reading and Total Math portions of the Metropolitan Achievement Tests.

The questionnaire responses for males and females were analyzed separately. They were subjected to a principal components factor analysis using an oblique method of rotation. These analyses yielded two negatively correlated behavioral dimensions for both males and females; an "impulsive behavior" dimension and a "reflective behavior" dimension.

Factor scores were computed on both dimensions for each subject. An examination of the relationship between factor scores on both dimensions for those subjects who were re-administered the scale ten weeks after its initial administration, indicated that both dimensions were highly reliable for both males and females in this group. The observed relationship between factor scores on both

dimensions and teacher ratings of impulsivity, strongly supported the validity of the factor scores for males. For the females, however, while this relationship was significant for the impulsivity dimension, it only approached significance for the reflectivity dimension.

The relationship between factor scores on both dimensions and available demographic data was also examined. Contrary to expectations, it was found that less reflective male and female subjects had higher achievement test scores than more reflective subjects. In addition, for females, it was also found that better achievement test performance was associated with higher scores on the impulsivity dimension. Several possible explanations for these findings were discussed, as were methods for testing them out in subsequent investigations using these scales.

Several methodological issues were discussed pertaining to the potential generalizability of these findings. In addition, several potential uses for the impulsivity and reflectivity scales were offered. However, it was noted that the individual scales were in need of refinement prior to their use as either research or clinical tools. A number of methods for revising the scales were offered.

CHAPTER I INTRODUCTION

Purpose

The Impulsivity Scale for Children (ISC: Sutton-Smith and Rosenberg, 1959) was developed as a self-report measure of a broad dimension of impulsive behavior. It was expected that the availability of an economical test for measuring this construct would allow practitioners such as psychologists and teachers to have at their disposal, a method for conceptualizing impulsive behavior with a significant degree of consensual validation. To the extent that impulsive behavior could be implicated in poor academic performance, then the ability to objectively isolate very impulsive children would serve as a first step in developing appropriate interventions. However, despite the potential utility of such a scale, it has received remarkably little attention in the psychological literature to date. As such, the reliability and validity of the ISC, as a measure of impulsive behavior, have not been firmly established.

The purpose of the present study was to examine both the reliability and validity of a revised form of this scale. The proposed revisions included the addition of several scale items which theoretically should have aided in the delineation of this scale as a measure of

impulsive behavior. The revised scale's long term stability was also examined for a normative population of nine to twelve-year-old elementary school children. Factor analytic methods were used to assess the factorial structure of the revised version of the scale. Scores on the revised version of the scale were compared to scores on the original version of the ISC, for a sub-sample of the total population studied. And finally, comparisons between scale scores and teacher ratings of impulsive behavior were used to assess the validity of both versions of the scale.

Literature Review

As it was originally developed, the ISC was a nineteen item self-report scale for measuring a broad dimension of impulsive behavior. Each item could be responded to either "yes" or "no". This original scale was itself based upon the combination of two earlier versions of the scale, one based upon the responses of a group of college freshmen, and one based upon responses obtained from a sample of fourth, fifth, and sixth grade students. All of the items on the original version of the scale were keyed in the affirmative for impulsivity. In an answer to the criticism that the scale tapped the tendency to respond in the affirmative to self-descriptive statements regardless of content, and not impulsive behavior, Hirschfield (1965) modified the scale to include, in random order, both affirmative and negative

items keyed for impulsivity. Response categories were also changed from yes-no to true-false. A more recent, but less frequently used modification of the scale by Bjorklund and Butter (1973), involved the inclusion of five additional true-false questions to serve as a "Lie" scale. In this particular study, subjects giving three or more positive responses to the Lie items were excluded from further investigation.

To date, only two studies have reported any reliability data for the ISC. Sutton-Smith and Rosenberg (1959) reported a test-retest reliability of .85 for the scale. More recently, Kendall and Finch (1978) reported a short term (one month) dependability coefficient of .56 and a long term (three months) stability coefficient of .33.

Validation studies have relied almost exclusively upon correlations between ISC scores and teacher rankings or ratings of impulsive behavior.* For example, Sutton-Smith and Rosenberg (1959) reported that fifteen of eighteen correlations relating teacher rankings or ratings of impulsive behavior to impulsivity scale scores achieved significance at the .05 level or better. These correlations ranged from $-.33$ to $-.73$. Hirschfield (1965) also correlated teacher

* The method of ranking/rating impulsivity determined the directionality of the correlations (e.g., 1=least impulsive and 10=most impulsive vs. 1=most impulsive and 10=least impulsive).

rankings of impulsive behavior with ISC scores, in a sample of fifth and sixth grade students. Ranked difference correlations were computed comparing teachers' rankings of their students within each class and the students' ranked test scores. Five of the resulting fifteen correlations reached significance at the .05 level. These significant correlations ranged in magnitude from .73 to .87. Using teacher ratings as opposed to rankings of impulsivity, Bjorklund and Butter (1973) found little relationship between teacher ratings of specific behaviors and ISC scores, in a sample of fourth grade students. More recently, Bentler and McClain (1976) correlated ISC scores with both teacher and peer ratings of impulsive behavior for a sample of sixth grade students. The resulting correlations were .45 and .35 respectively. And finally, Vacc and Mercurio (1978) found a correlation of .56 between teacher ratings of impulsivity and ISC scores in a sample of fifth grade students.

The available reliability data for the scale are obviously very limited. Furthermore, the available validity data are not at all consistent. This may, in part, reflect methodological problems with the validation studies carried out thus far. Sample sizes have varied from a mean of 28.5 for each classroom examined (Sutton-Smith and Rosenberg, 1959) to an N of 144 (Bjorklund and Butter, 1973). With respect to the latter, it is of interest to note that, while having a modest sample size, and making use of teacher ratings of specific

behaviors (as opposed to the more global impulsive behavior ratings or rankings used in other studies), this study also yielded the least support for accepting the ISC as a valid measure of impulsive behavior. However, this finding may also have been an artifact of the more stringent statistical procedures used in this study, relying as it did, on teacher ratings vs. rankings of impulsive behavior. This latter explanation does lose some support in light of the work by Bentler and McClain (1976) and Vacc and Mercurio (1978), both of whom relied upon teacher ratings of impulsivity.

Obviously, additional research is needed to more firmly establish the psychometric credibility of the ISC. However, it is important to note that, with respect to its reliability, there are several potential sources of measurement error within the scale which could act to limit its reliability. These sources of error include the presence of scale items which are very global and non-situationally specific. In addition, many of the items are not very descriptive or operationally defined, and this may contribute to their being misunderstood by the children responding to them. And finally, the use of dichotomous rating categories can act to limit the reliability of the scale. Little attention has been paid to the issues of dependability vs. stability of ISC scores. This issue reflects a more basic concern with hypothesizing about whether impulsive behavior, defined in a broad sense, can be viewed as a state variable which

might be expected to spontaneously diminish with time, or a trait variable which would not be expected to change over time, unless specific interventions were designed to promote change.

Rationale

Impulsive behavior has been identified as being undesirable, particularly as it relates to poor academic performance in school. For example, based upon a large body of empirical research, Virginia Douglas and her associates (Douglas, 1974) have argued that the academic performance deficits frequently found in hyperactive children, are attributable to deficits in the areas of impulse control and attention. The realization of the potentially aversive consequences of impulsive behavior has led to the development of a number of different types of interventions designed to enable impulsive children to learn to exert more conscious control over their behavior. For example, a number of investigators have proposed the use of instructional programs designed to teach cognitive self-mediation of behaviors, as a potentially effective method for modifying impulsive behavior (e.g., Kendall and Finch, 1976, 1978; Meichenbaum and Goodman, 1971). Others have recommended that impulsive children be instructed in the use of more effective problem solving and search strategies (e.g., Egeland, 1974; Heider, 1971). The use of these types of interventions depends upon the practitioner's ability to

effectively isolate children whose behavior is deemed to reflect impulsivity. One accepted method for doing this revolves around a conceptualization of impulsivity as a cognitive style variable, along with reflectivity. Kagan and his associates have proposed the use of the Matching Familiar Figures Test for classifying children as being either reflective or impulsive in their approach to problem solving situations (Kagan, Rosman, Day, Albert and Phillips, 1964; Kagan, 1965a, 1965b, 1965c). The Matching Familiar Figures Test is a match-to-sample cognitive task. Children are presented with a standard figure and usually, four, six or eight figures differing from one another in one or more details. The task for the child is to choose the alternative which exactly matches the standard. With few exceptions, the Matching Familiar Figures Test has been the method of choice for isolating impulsive subjects in research studies designed to examine the relative efficacy of various methods for modifying impulsive behavior. However, as several authors have noted, there are many methodological problems with the Matching Familiar Figures Test (e.g., Ault, Mitchell and Hartmann, 1976; Egeland and Weinberg, 1976), as well as broader conceptual problems with the impulsivity-reflectivity cognitive style dimension (e.g., Block, Block and Harrington, 1974). In addition there is also a body of psychological literature which strongly suggests that what is tapped by the Matching Familiar Figures Test may, in fact, not reflect those behaviors which teachers use as criterion measures

for classifying a child as being impulsive (e.g., Bjorklund and Butter, 1973; Vacc and Mercurio, 1978). Hence, the need for a scale specifically designed to tap the types of behaviors suggested as reflecting impulsive behaviors at home, in school, and in interpersonal situations. One such scale is the Impulsive Classroom Behavior Scale (Weinreich, 1975), a nine item teacher rating scale which was specifically developed for use in research involving the modification of impulsivity. The search for a more economical, less time consuming measure of impulsivity led to the development of the ISC. However, the review of the psychometric status of the scale suggests that we are not, at this point in time, able to state emphatically that the ISC is a reliable, valid measure of the construct of impulsivity. If its psychometric credibility could be established, then the ISC could hypothetically serve a multitude of purposes. In addition to allowing the practitioner to define observable impulsive behavior for the purposes of research and/or intervention, the focus of the scale on observable behaviors could have implications for delineating the specific foci of intervention plans.

Overview and Hypotheses

Except for the original study by Sutton-Smith and Rosenberg (1959), and the subsequent work by Hirschfield (1965), much of the research attempting to shed some light on the psychometric credibility of the ISC,

has not had the study of the scale's reliability and/or validity as its primary focus.

Given some of the problems with the ISC as it was originally developed, it was felt that the scale had to be revised prior to any attempts to establish the scale's reliability and validity. It was the establishment of the reliability and validity of this revised version of the scale which was given primary emphasis in this study. The scale's long term stability (ten weeks) was assessed, and factor analytic procedures, with their emphasis upon the delineation of the factorial composition of scales, was used to assess its basic structure. The relationship of the revised version of the scale (RISC) to the original ISC was also assessed by examining the correlation between scores on both scales, for a subset of the total population studied.

If the original version of the scale was used, one would predict that factor analysis would yield only one general factor. This is due to the scale's dichotomous rating categories, ambiguous items, and lack of situational specificity. In an effort to more clearly delineate the factor structure of the scale, and generate information relevant to the conceptualization of impulsivity, the original ISC was revised via the addition of twenty-nine marker items. These included items reflecting conduct problems, items reflecting behavioral self-control, and a set of six items randomly selected from the scale's original item pool, phrased in the negative for impulsivity. The

latter were included as a gross indicator of whether subjects were carefully attending to the task. The rating categories for the scale were also modified to allow the child a choice of five responses for each item.

Based upon these considerations, the following predictions with respect to the factor analytic data were made:

- (1) upon analysis, an impulsive behavior factor would emerge, reflecting loss of affective and behavioral controls, poor planning, and restlessness.
- (2) in addition, a second factor would emerge reflecting behavioral self-control.
- (3) while there is some indication in the literature, that males score as being more impulsive than females on the ISC, it was predicted that, in terms of content, there would be no difference in the factor structure of the RISC for males and females.

CHAPTER II METHOD

Subjects

The data for the study were obtained from a sample of 450 children, 230 females and 220 males, between the ages of nine and twelve. All were enrolled in either fourth, fifth, or sixth grade elementary school classes in Gainesville, Florida.* This final subject pool was chosen from approximately 1100 children. The only criterion for selection was the return of a signed parental consent form allowing the child to participate. Other than this criterion, the attempt was made to choose a subject population which, as closely as possible, approximated an unselected sample, in order to insure the presence of a high degree of variability on the impulsivity scale.

In Table 1, the mean age, and where available, the mean Otis-Lennon Mental Abilities Test IQ, and mean achievement test scores (i.e., total reading and total math standard scores from the Metropolitan Achievement Tests) are provided, for the total sample, and for the males and females separately.

* Including students from the P.K. Yonge Laboratory School.

TABLE 1

Mean Age, Otis-Lennon IQ, and Standard Scores From
the Metropolitan Achievement Test

	<u>Age</u>	<u>IQ</u>	<u>Metropolitan Achievement Test</u>	
			<u>Total Reading</u>	<u>Total Math</u>
Total Sample (N=450)	10.91 (SD=.93)	114.90 (SD=15.22)	79.71 (SD=15.46)	87.78 (SD=13.47)
Males (N=220)	10.92 (SD=.94)	115.42 (SD=15.99)	79.42 (SD=16.16)	87.50 (SD=14.59)
Females (N=230)	10.91 (SD=.93)	114.39 (SD=14.45)	79.99 (SD=14.79)	88.06 (SD=12.30)

* SD - standard deviation

Instrument

The most contemporary version of the ISC (Bjorklund and Butter, 1973), containing twenty-five true-false items was used as the original version of the scale (see Appendix A). All items were keyed in the affirmative for impulsivity given Hirschfield's (1965) finding that impulsive children were no more likely than non-impulsive children to respond in the affirmative to self-descriptive questionnaire items. With the addition of the twenty-nine marker items previously mentioned (see Appendix A), the total Revised Impulsivity Scale for Children (RISC) included 54 items, sequenced in random order. For the revised scale, subjects were asked to rate each item on a five point scale ranging from 1=never happens, to 5=always happens.

Procedure

The RISC was group administered by the principal investigator to each individual class of subjects. At each administration, each child was given a copy of the scale and then asked to read the directions silently as they were read aloud to them. The directions used were as follows:

there will be fifty-four items on this questionnaire. Read each item to yourself, as I read it aloud. Then, using the scale to the right of each item, decide how often you engage in that particular behavior. A "1" means never, a "3" means sometimes, and a "5" means always. After you have decided upon your answer, circle the appropriate number to the right of each item. (Appendix A)

The "2" and "4" response choices were also explained to the subjects in terms of their relationship to the other three possible choices. That is, subjects were told that:

a "2" response represented more than a "1" response (never), but less than a "3" response (sometimes); a "4" response represented more than a "3" response (sometimes), but less than a "5" response (always). (Appendix A)

Items were read to the subjects in order to allow for the pacing of the scale administration. By allowing approximately 15-30 seconds per question, the total time required to administer the scale was approximately 15-20 minutes. The children were encouraged to answer each question as truthfully as they could. The questionnaires were numbered in order to maintain the subject's anonymity. They were also assured that their performance on the scale had nothing to do with their academic capabilities.

Following the administration of the RISC to the total subject pool, two sub-samples were selected. This was accomplished using the procedures outlined for generating random samples in the manual for the Statistical Package for the Social Sciences (SPSS: Nie, Hull, Jenkins, Steinbrenner and Bent, 1975). This process was used to generate two random samples of approximately 100 subjects each. Table 2 includes the mean age, IQ and achievement test scores for each total sub-sample as well as for the males and females within each sub-sample.

TABLE 2

Mean Age, Otis-Lennon IQ, and Standard Scores from the
Metropolitan Achievement Test for the
Reliability and Validity Sub-samples

	<u>Age</u>	<u>IQ</u>	<u>Metropolitan Achievement Test</u>	
			<u>Total Reading</u>	<u>Total Math</u>
Reliability				
Sub-sample (N=92)	10.90 (SD=1.03) *	115.55 (SD=13.64)	79.17 (SD=14.36)	89.35 (SD=12.55)
Males (N=41)	10.96 (SD=.96)	115.00 (SD=14.51)	77.76 (SD=15.48)	89.28 (SD=14.78)
Females (N=51)	10.84 (SD=1.09)	115.92 (SD=13.18)	80.20 (SD=13.60)	89.40 (SD=10.86)
Validity				
Sub-sample (N=94)	11.00 (SD=.88)	116.34 (SD=14.39)	83.00 (SD=12.47)	91.55 (SD=11.82)
Males (N=52)	11.05 (SD=.90)	116.13 (SD=14.77)	83.10 (SD=12.29)	91.18 (SD=12.32)
Females (N=42)	10.93 (SD=.86)	116.64 (SD=14.10)	82.86 (SD=12.94)	92.07 (SD=11.28)

* SD - standard deviation

Subjects in the reliability sub-sample (N=92) were re-administered the RISC under the same conditions used previously, approximately ten weeks after its initial administration. Subjects in the validity sub-sample (N=94) were administered the original version of the ISC.

Directions for this administration were as follows:

there will be twenty-five items on this questionnaire. Read each item to yourself as I read it aloud. Then decide whether it is true about you or false about you. If it is true or mostly true, circle the T; if it is false or not usually true about you, then circle the F. (Appendix A)

The teachers of subjects in the validity sub-sample were also asked to rate each subject on a 1-11 scale of impulsivity (see Appendix B), where "1" indicated that the child's behavior was not at all characterized by impulsivity, and "11" indicated that the child's behavior was characterized by extreme impulsivity.

Factor Analyses

Given the exploratory nature of this investigation, and the suggestions in the literature that sex differences may represent an important variable in this area, the questionnaire data were analyzed for males and females separately.

The factor analyses were carried out in the following manner. A 54 X 54 pearson product moment correlation matrix was computed. This matrix was then submitted to a principal factors analysis,

as outlined in the SPSS Manual (Nie et al., 1975). This mode of factor analysis employed an iteration procedure for improving communality estimates which were then used as the main diagonal elements of the correlation matrix. Rotation was carried out using the direct oblimin method of oblique rotation. The obliqueness criterion was set at zero. This procedure allowed for correlation amongst the generated factors but did not bias the analyses in this direction. The resulting rotated factor structures were then examined for the extent to which they approximated simple structure (i.e., most all of the loadings on a given factor were small, with only a few being of significant size; a given variable should have significant loadings on only one factor and, the pattern of loadings for a given factor across all of the variables should be different from one factor to the next). Several guidelines for the interpretation of factor structures were used (Comrey, 1973). These included the criteria that for a loading to be significant, it had to be greater than $\pm .40$, and that at least six items had to load significantly on a given factor for it to be interpreted.

CHAPTER III RESULTS

Factor Analyses

For both the males and the females in the subject pool, factor analysis was originally performed with no limits placed upon the number of factors to be extracted and then rotated. However, after this initial analysis, which yielded nineteen rotated factors for each group, it was decided to limit a subsequent analysis for each group to the extraction and rotation of five factors. It is this analysis for both the males and the females studied, which is reported here. This decision was based upon Comrey's (1973) discussion of factor extraction, and the fact that the percentage of variance accounted for by each successive factor beyond five, in conjunction with the lack of significant loadings on those factors, suggested that it was highly unlikely that they would be interpretable.

Males

The rotated factor structure for males yielded two interpretable factors, accounting for 67.4% of the total variance of the questionnaire. These two factors were found to be negatively correlated ($r = -.30$) with no overlap of items having significant loadings. Items loading

significantly on these two factors are presented in Table 3. In addition, both the factor pattern matrix and the factor structure matrix for males are presented in Appendix C.

Factor 1 for males, accounted for 51.5% of the total variance. Items loading significantly on this factor were indicative of a high energy level, restlessness, and episodic loss of affective control. This factor was labelled Impulsivity. Factor 2 for males accounted for 15.9% of the total variance. Items loading significantly on this factor were concerned with the thoughtful planning of activities, and self-directed behavior. Thus, this factor was labelled Reflectivity.

Females

The rotated factor solution for the females in the subject pool also yielded two negatively correlated ($r = -.24$) interpretable factors which, in this case, accounted for 60.3% of the total variance. Items having significant loadings on these two factors are presented in Table 4; the rotated factor pattern and factor structure matrices are presented in Appendix C.

The interpretable factor structure for females less closely approximated Comrey's (1973) criteria for simple structure, than did the factor structure for the males. There was no overlap of items loading significantly on the two factors, but the items loading

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TABLE 3

Significant Rotated Factor Loadings for Male Factors 1 and 2

Factor #1 Item #	Description	Factor Loadings					h^2
		1	2	3	4	5	
23	I like to wrestle and horse around.	<u>.53</u>	-.10	-.09	-.02	-.06	.30
10	I am restless.	<u>.49</u>	-.03	.15	.11	.09	.28
24	I like to just blow off steam.	<u>.48</u>	.01	-.06	.08	-.02	.24
11	I have trouble sitting still.	<u>.46</u>	-.03	.26	.08	.15	.31
36	I get so angry sometimes I want to kick, scream and throw things.	<u>.46</u>	-.05	.01	-.08	-.10	.24
6	I like to keep moving around.	<u>.43</u>	.02	-.02	.13	-.03	.20
38	I like to dare kids to do things.	<u>.42</u>	-.10	-.06	-.22	-.27	.31
30	I must admit, I'm a pretty good talker.	<u>.42</u>	.07	-.08	-.11	-.01	.20
41	I usually say the first thing that comes into my head.	<u>.40</u>	-.03	.02	-.06	.003	.16
Factor #2							
Item #							
15	I finish all of my homework before I go out to play.	-.15	<u>.51</u>	.14	-.02	.05	.30
20	I usually plan what I am going to do before I do it.	.06	<u>.50</u>	-.19	.11	.01	.30
5	When I do my homework, I take my time to make sure I do the best job I can.	-.003	<u>.50</u>	-.03	.02	.04	.25
52	I keep my room at home neat and clean.	-.16	<u>.47</u>	-.02	-.08	-.04	.26
49	I go to bed without being told that I have to.	-.003	<u>.44</u>	.07	.04	.07	.19
8	I like to bother other children at school (negative).	.26	<u>-.42</u>	.09	-.12	-.03	.27
17	In school, I speak only when I am spoken to by the teacher.	-.23	<u>.40</u>	.16	.09	-.02	.25

TABLE 4

Significant Rotated Factor Loadings for Female Factors 1 and 3

Factor #1	Description	Factor Loadings					h^2
Item #		1	2	3	4	5	
11	I have trouble sitting still.	<u>.49</u>	-.04	.03	-.00	.03	.24
4	I like to show off in front of my friends.	<u>.47</u>	.20	-.04	.03	.03	.26
23	I like to wrestle and horse around.	<u>.45</u>	.11	-.19	.04	.27	.32
21	I get angry quickly.	<u>.42</u>	-.02	.01	-.17	-.06	.21
24	I like to just blow off steam.	<u>.41</u>	.12	-.01	-.02	-.01	.18
30	I must admit, I'm a pretty good talker.	<u>.40</u>	-.01	-.33	.20	-.09	.32
Factor #2							
Item #							
31	When things get quiet, I like to stir up a little fuss. (negative)	.37	-.08	<u>-.46</u>	.12	.13	.39
20	I usually plan what I am going to do before I do it.	.05	-.01	<u>.46</u>	-.03	-.09	.22
38	I like to dare kids to do things. (negative)	.11	-.10	<u>-.45</u>	-.08	.21	.27
29	I can read for half an hour or more without getting up from my seat.	-.01	.11	<u>.44</u>	-.06	.27	.27
5	When I do my homework, I take my time to make sure I do the best job I can.	-.02	-.16	<u>.44</u>	.35	-.15	.36
15	I finish all of my homework before I go out to play.	-.17	-.14	<u>.42</u>	.16	-.00	.26

significantly were less factor pure than those for the males, in certain instances.

Factor 1 for females, accounting for 48% of the total variance was very similar to Factor 1 for the males, although not as robust in terms of the number of items loading significantly and the percentage of variance accounted for by the factor. It included items indicative of loss of emotional control, and restlessness, and again, would appear to be reflective of an underlying Impulsivity dimension. Factor 3 for females, accounting for 12.3% of the total variance also bore a great deal of content similarity to Factor 2 for the males. Items loading significantly were concerned with methodical responding and the maintenance of control, suggesting that it was also indicative of an underlying Reflectivity dimension.

Factor Scores

Having identified two fairly strong factors for the males and two somewhat less robust but similar factors in terms of content for the females, factor score estimates were computed for each subject within each group. The method for computing factor scores was similar to the preferred procedure described by Comrey (1973), wherein items with significant loadings on a given factor are first standardized to the same mean and standard deviation, and then weighted based upon the loading of that item on the factor, prior to being summed to give

a total score. In this case, the item weightings represented an integral value approximately proportional to the factor loading of that item. The major advantage of this method for computing factor scores is that it allows those items having the highest loadings on a given factor to have the greatest effect in estimating the factor scores.

Factor Score Reliability

The availability of a second set of questionnaire responses for a randomly selected sub-sample of the total subject population, allowed for an assessment of the reliability of the factor scores for both the Impulsivity and Reflectivity factors. Factor scores were computed for subjects in the reliability sample using their responses at the ten week re-administration of the RISC and the weighting coefficients derived from the factor analyses of the total samples of males and females. It was felt that the same weighting coefficients could be used for the reliability sub-sample because t-tests comparing that group with the total sample indicated no significant differences in either age, IQ, or achievement test scores (see Table 5). As such, it was assumed that this sub-sample was representative of the larger group. Table 6 presents the reliability coefficients for the factor scores for the males and females separately.

TABLE 5

T-Test Comparisons of Reliability Sub-sample to Total Subject Pool

Variable	N of Cases	Mean	Stand. Dev.	Deg. of Freedom	T Value	2-Tailed Probability for T-test
<u>Age</u>						
Total Sample	447	10.91	0.93	123.39	0.14	0.891
Reliability Sub-sample	92	10.90	1.03			
<u>IQ</u>						
Total Sample	310	114.90	15.22	102.54	-0.34	0.732
Reliability Sub-sample	66	115.55	13.64			
<u>TREAD*</u>						
Total Sample	316	79.71	15.46	105.32	0.28	0.783
Reliability Sub-sample	69	79.17	14.36			
<u>TMATH**</u>						
Total Sample	316	87.78	13.47	105.03	-0.93	0.355
Reliability Sub-sample	69	89.35	12.55			

*TREAD - Standard score for the total reading portion of the Metropolitan Achievement Tests.

**TMATH - Standard score for the total math portion of the Metropolitan Achievement Tests.

TABLE 6
Reliability Coefficients for Factor Scores
For Males and Females

	Sex	
	Males (N=41)	Females (N=51)
Factor Scores:		
Impulsivity	.72*	.67*
Reflectivity	.68*	.64*

* $p < .001$

As can be seen, both the impulsivity and reflectivity dimensions were highly reliable for both the male and female subgroups within the reliability sub-sample. However, this finding must be tempered by the fact that the relatively small sample sizes may have acted to artificially inflate the correlation coefficients.

The Relationship of Factor Scores to Subject Variables

Factor scores were correlated with available demographic data for all subjects. Table 7 presents the resulting correlations for males and females.

For both the males and females respectively, the results indicated that older subjects tended to be less reflective (Males: $r = -.25$, $p < .01$; Females: $r = -.39$, $p < .001$). However, only in the case of the females was there a corresponding increase in impulsivity for the older children ($r = .23$, $p < .001$).

An interesting finding involved the relationship between subjects' standard scores for the Total Reading and Total Math portions of the Metropolitan Achievement Tests. While there was no significant relationship found for either group, between factor scores for the Impulsivity and Reflectivity dimensions and Otis-Lennon Mental Abilities Test IQ, in both groups it was found that less reflective subjects had higher achievement test scores (Males: Total Reading, $r = -.21$, $p < .01$; Total Math, $r = -.27$, $p < .01$; Females: Total

TABLE 7

The Correlational Relationships of Factor
Scores to Subject Variables

MALES (N=220)				
	Subject Variable			
	Age	IQ	Metropolitan Achievement Test	
			Total Reading Standard Score	Total Math Standard Score

Factor Score:

Impulsivity	.04	-.01	-.07	-.04
Reflectivity	-.25	-.11	-.21*	-.27*

p<.01

FEMALES (N=230)				
	Subject Variable			
	Age	IQ	Metropolitan Achievement Test	
			Total Reading Standard Score	Total Math Standard Score

Factor Score:

Impulsivity	.23*	.04	.22**	.21**
Reflectivity	-.39*	.07	-.20**	-.25**

*p<.001

**p<.01

Reading, $r = -.20$, $p < .01$; Total Math, $r = -.25$, $p < .01$). Furthermore, in the female subgroup, it was also found that better achievement test performance was also associated with higher scores on the Impulsivity dimension (Total Reading, $r = .22$, $p < .01$; Total Math, $r = .21$, $p < .01$).

Given the fact that both dimensions were found to be negatively correlated with one another for males and females, it was decided to examine, on at least a descriptive level, the multiple correlation of factor scores on both dimensions with each of the available subject variables. This was accomplished using the multiple regression procedure outlined in the SPSS Manual (Nie et al., 1975). The results of these analyses are presented in Table 8. As can be seen, while for both males and females, the multiple correlation of both factors with age (males: .31; females: .35), Total Reading Score (males: .28; females: .25) and Total Math Score (males: .35; females: .27) from the Metropolitan Achievement Tests, are substantial, only in the case of "age" for the females did the factor scores taken jointly account for a substantial proportion of the variance (i.e., 20%) in a subject variable.

The Relationship of Factor Scores to ISC Performance and Teacher Ratings of Impulsivity

The availability of a sub-sample of subjects who had completed the original version of the ISC and were also rated for impulsivity

TABLE 8

Multiple Correlations of Impulsivity and Reflectivity
Factor Scores with Subject Variables

MALES (N=154)*				
	Multiple R	R Square	Adjusted R Square	Standard Error
Age	.31	.10	.09	0.90339
IQ	.12	.01	.00	15.98204
Metropolitan Achievement Test				
Total Reading				
Standard Score	.28	.08	.07	15.44168
Total Math				
Standard Score	.35	.12	.11	13.57607
FEMALES (N=156)**				
	Multiple R	R Square	Adjusted R Square	Standard Error
Age	.45	.20	.19	0.82477
IQ	.09	.01	.00	14.48784
Metropolitan Achievement Test				
Total Reading				
Standard Score	.25	.06	.05	13.73290
Total Math				
Standard Score	.27	.07	.06	11.85801

*Represents that portion of the total sample of males (N=220) having data points for each of the variables included in the analyses.

**Represents that portion of the total sample of females (N=230) having data points for each of the variables included in the analyses.

by their classroom teachers allowed for an examination of the validity of factor scores based on the Impulsivity and Reflectivity dimensions, the relationship between RISC performance and performance on the original version of the ISC, and the validity of the original version of the ISC. T-tests comparing this validity sub-sample with the total sample, on the basis of age, IQ, and achievement test scores found no significant differences on any of these variables except for the total Math portion of the Metropolitan Achievement Tests (see Table 9). Hence, it was felt that in general, findings pertaining to this sub-sample would be generalizable to the sample as a whole.

Table 10 presents the correlations between the Impulsivity and Reflectivity factor scores, performance on the ISC, and teacher ratings of impulsivity, for males and females separately. Again, these findings must be interpreted with caution given the sample size limitations. Despite this fact, there were strong indications as to the validity of the factor scores for both males and females. This was based upon the observed relationship between factor scores on both dimensions, and teacher ratings of impulsive behavior. For both groups, it was found that subjects scoring higher on the impulsivity dimension were also rated as being more impulsive by their teachers (Males: $r=.29$, $p<.05$; Females: $r=.29$, $p<.05$). In addition, male subjects with higher scores on the reflectivity dimension were also rated as being less impulsive by their teachers ($r=-.32$, $p<.05$). This relationship approached significance for females.

TABLE 9

T-test Comparisons of Validity Sub-sample to Total Subject Pool

Variable	N of Cases	Mean	Stand. Dev.	Deg. of Freedom	T Value	2-Tailed Probability for T-test
<u>Age</u>						
Total Sample	447	10.91	0.93			
Validity Sub-sample	94	10.99	0.88	139.94	-0.84	0.405
<u>IQ</u>						
Total Sample	310	114.90	15.22			
Validity Sub-sample	67	116.34	14.39	100.53	-0.74	0.462
<u>TREAD*</u>						
Total Sample	316	79.71	15.46			
Validity Sub-sample	67	83.00	12.47	113.52	-1.88	0.063
<u>TMATH**</u>						
Total Sample	316	87.78	13.47			
Validity Sub-sample	67	91.55	11.82	105.65	-2.31	0.023

*TREAD - Standard score for the total reading portion of the Metropolitan Achievement Tests.

**TMATH- Standard score for the total math portion of the Metropolitan Achievement Tests.

TABLE 10

The Correlational Relationships of Factor Scores to
ISC Performance and Teacher Ratings of Impulsivity

MALES (N=52)		
	ISC Score	Teacher Rating
Factor Score:		
Impulsivity	.58**	.29*
Reflectivity	-.55**	-.32*

*p<.05

**p<.001

FEMALES (N=42)		
	ISC Score	Teacher Rating
Factor Score:		
Impulsivity	.67***	.29*
Reflectivity	-.61***	-.24**

*p<.05

**p<.07

***p<.001

Since the RISC used as its base, the ISC as it was originally developed by Sutton-Smith and Rosenberg (1959), their relationship to one another was examined for subjects in the validity sub-sample. As can be seen from an examination of Table 9, the expected relationship of RISC scores on both dimensions to ISC scores was found for both males and females in the validity sub-sample. That is, males found to have higher factor scores on the Impulsivity dimension of the RISC were also found to have ISC scores more indicative of Impulsivity ($r=.58$, $p<.001$). It was also found that more reflective subjects, based on RISC performance, had lower ISC scores ($r=-.55$, $p<.001$). For the females, high RISC impulsivity factor scores were also associated with high ISC scores indicative of impulsivity ($r=.67$, $p<.001$). In addition, reflective females, based on their RISC performance, were found to have lower ISC scores ($r=-.61$, $p<.001$).

Validity of the ISC

As was previously mentioned, to date, attempts to validate the ISC have relied upon examining the correlation of ISC scale scores to either teacher ratings or teacher rankings of impulsivity. This relationship was examined in the present study for all of the subjects in the validity sub-sample. The resulting correlations indicated that while the ISC was a valid measure of impulsivity for the males in the sub-sample ($r=.27$, $p<.05$), and for the sub-sample as a whole

($r=.26$, $p<.01$), it was far less adequate a measure of the construct for the females in this group ($r=.05$, $p<.40$).

As was the case with the RISC factor scores, ISC performance for subjects in the validity sub-sample were correlated with available demographic data. Table 11 presents the resulting correlations for males and females. As can be seen, none of these relationships approached significance for either group.

TABLE 11

The Correlational Relationships of ISC Performance
to Subject Variables

	MALES (N=52)			
			Metropolitan Achievement Test	
	Age	IQ	Total Reading Standard Score	Total Math Standard Score
ISC Performance	.10	-.20	-.19	-.15

	FEMALES (N=42)			
			Metropolitan Achievement Test	
	Age	IQ	Total Reading Standard Score	Total Math Standard Score
ISC Performance	.11	-.06	-.04	-.11

CHAPTER IV DISCUSSION

The study of impulse control problems in children has been impeded by a lack of appreciation for the potential heterogeneity of this construct. This is despite the fact that impulsivity has been looked to as a major contributor to academic difficulties in children. The psychological literature to date has suggested that the available methods for assessing impulsivity in children have not adequately tapped those aspects of the dimension which reflect, for example, the types of behaviors used by teachers as criteria for labelling a child as being impulsive. The present study was undertaken in an effort to attempt to delineate, via questionnaire data, a potentially situation specific behavioral dimension of impulsivity.

The factor analysis of a revised self-report questionnaire designed to measure impulsivity, yielded two negatively correlated behavioral dimensions for both males and females. Both dimensions tended to be somewhat more robust for the males than for the females in the sample studied. The first dimension was characterized by a number of impulsive characteristics, and was named accordingly. The second dimension, indicative as it was of the pre-planning of activities,

methodical responding, and affective control, was named "Reflectivity" for both groups.

Further analyses indicated that, for a randomly selected sub-sample of the total subject pool, factor scores derived from subjects' questionnaire responses for each dimension, were highly reliable. Through the correlation of factor scores with teacher ratings of impulsivity, the validity of the factor scores for both dimensions was strongly supported for the males in another randomly selected sub-sample of subjects. The validity of the factor scores was also supported for the females in this group although less substantially for the Reflectivity factor, than was the case for the males.

The implications of these findings are many as are the possibilities for further research. However, prior to further interpretation, it must be noted that there are several methodological issues which serve to restrict the generalizability of these findings and hence, must be dealt with in subsequent research designed to refine this scale. First, as already mentioned, the relatively small number of subjects in the reliability and validity sub-samples act to limit the extent to which we can accept the findings pertaining to those groups. Further investigations attempting to examine the utility of the RISC should consider increasing the total sample size as well as the size of samples used for establishing the scale's reliability and validity. In addition, with respect to establishing the scale's

reliability, subsequent studies should consider examining its short term dependability (e.g., one week) as well as its long term stability (e.g., ten weeks).

Two related concerns involve the composition of the subject pool. The attempt was made to, as closely as possible, approximate an unselected sample in order to enhance the probability of there being a wide degree of variability on the impulsivity dimension. In analyzing the results, the major subject variable attended to, apart from demographic variables such as age, IQ, and achievement test scores, was subjects' sex. Katzenmeyer and Stenner (1977), in their discussion of factor structure comparisons, pointed out the importance of attending to differences in factor structure across criterion groups within samples (i.e., with criterion groups based upon sex, race, etc.). The present study did not examine, at any level, the impact of race, and the associated variable of social class upon questionnaire performance and resulting factor structure. With respect to the latter, prior research has suggested that lower class children are in fact, more impulsive, as measured by the MFFT, than are middle class children (e.g., Heider, 1971; Schwebel, 1966). Race was not studied here primarily because of the relatively small number of non-white children in the total sample (N=51). This variable, as well as social class should, however, be examined within future attempts to refine this scale, and in so doing, possibly broaden its

applicability in terms of subject populations for which it could be of some use.

Related to this issue is the already touched upon issue of factor structure comparisons. Given the rather exploratory nature of this study, the decision was made to analyze the results for males and females separately. The resulting analyses indicated that while there was content similarity across the two dimensions for both groups, the factor structure for males was somewhat more robust in terms of the absolute number of items loading significantly on the factors, and the percentage of variance accounted for by the factors, than that for the females. The desire to broaden the applicability of the scale could argue for attempts to compare the factor structures across criterion groups in order to examine the degree to which they share common variance. The goal in carrying out such an analysis would be to see if it were possible to develop a single scale for each dimension which would have validity across criterion groups. However, because of the seminal nature of this study, this was left for future investigations, following the refinement of the factors in terms of the addition and deletion of scale items in order to increase the percentage of variance accounted for by the individual factors. Subsequent investigations may, at some point, attempt to examine the extent to which factor structures are comparable across different criterion groups (i.e., males vs. females; blacks vs. whites; or a

combination of the two). A number of empirical methods for establishing the invariance of factor structures have been reported (e.g., Harman, 1967; Rummel, 1970). On an empirical basis, because it provides an estimate of invariance with confidence intervals associated with those estimates, the coefficient of invariance described by Katzenmeyer and Stenner (1975, 1977) may be best suited for this purpose.

Given the attempt to examine the comparability of factor structures across criterion groups, the empirical question arises as to what, if anything, a composite scale (e.g., based upon male and female performance combined) would add to prediction to a particular criterion (e.g., in the case of impulsivity, possibly academic performance) over and above that which is achieved based upon a scale derived from an individual criterion group. This is a question open to empirical investigation through the use of multiple regression techniques.

Several potential uses for the impulsivity and reflectivity scales derived from the factor analysis of RISC performance, immediately present themselves. Both scales would appear to have direct research applicability. Their ability to identify impulsive and reflective subjects for study should, in future investigations, allow for the further delineation of the correlates of this dimension. The development of a reliable, valid method for identifying impulsive and reflective subjects is a necessary first step in any attempt to

conduct research as to the origins of these types of behaviors, the consequences of these types of behaviors, the types of environmental contingencies which could affect them, as well as uncovering possible mediating personality variables.

While the temptation is to hypothesize about direct clinical applications for these scales, the present findings, especially with respect to the relationship of factor scores to achievement test data, suggest that at this point, such an attempt would be premature. Rather, these findings suggest a number of potential avenues for further research, particularly with respect to the examination of the relationship between RISC scores and a number of other environmental/organismic variables, several of which will be discussed below.

However, all of these are potential uses for the scales, which will depend for their achievement upon the refinement of the scales to the point where they could be considered reliable and valid measures of impulsivity and reflectivity. Of necessity, the next step in what may be viewed as a step-wise research program examining the utility of the RISC would be to refine the individual scales. The goal here would be to increase their reliability and validity, increase the percentage of variance accounted for by the individual factors, while also broadening the spectrum of behaviors accounted for by the dimensions.

The results of the present investigation indicate that a number of the scale items, with negligible loadings on either of the interpretable factors, may be deleted during subsequent uses of the scale. In addition, given the quality of the items loading significantly on the two interpretable dimensions, it is also likely that new items could be constructed which would theoretically tap the same domain as those items being retained. These new items would include both general items indicative of impulsive and reflective behavior (e.g., item 10, "I am restless," for impulsivity; item 20, "I usually plan what I am going to do before I do it," for reflectivity), and more domain specific items such as those suggesting impulsive and reflective behavior in the classroom (e.g., item 5, "When I do my homework, I take my time to make sure that I do the best job that I can," for reflectivity). The inclusion of the latter type of item stems from the observation that, particularly with respect to those items loading significantly for the males in the total subject pool, several were indicative of behaviors specific to academic settings and activities.

The prospect of developing domain specific items merits further attention. It may be that in future investigations it will be possible to tap impulsive and reflective behavior in a number of different situations. These may include situations in the home and in interpersonal settings as well as those in school. To the extent that

this was achieved, it might then be possible to develop what would amount to an impulsivity-reflectivity profile for a given child. This would address itself to the manner and extent to which these types of behaviors manifest themselves across a wide variety of situations. There is in fact some theoretical precedent for considering this approach. Block et al. (1974), in their investigation into the utility of a measure of cognitive impulsivity, suggested that the impulsivity dimension may be sufficiently broad to require a number of assessment tools, each sensitive to the impact of specific situational variables. This may be extended to include the impact of organismic variables on the quality and quantity of impulsive and reflective behavior. In both cases, the specific variables, and their potential impact are open to empirical investigation.

In discussing methods for refining the scales, it is necessary to deal with the somewhat perplexing finding that for both males and females in this study, higher achievement test scores were associated with low reflectivity factor scores. Furthermore, for females, higher achievement test scores were also associated with high impulsivity factor scores. This is of interest in light of the fact that a number of prior investigators (e.g., Douglas, 1974) have maintained that for certain populations (e.g., hyperactive children), impulsivity was associated with academic performance deficits. In

addition, the thrust of the impulsivity modification literature (E.G., Meichenbaum and Goodman, 1971) has been to reduce impulsive responding and increase reflective responding in an effort to increase academic performance levels.

To this point in the psychological literature, the majority of the research attempting to relate impulsivity to academic performance deficits have focused on selected subject populations, such as hyper-active children. The focus of the present investigation upon the performance of normal children, highlights the need for extreme caution in terms of extending the conceptualization of impulsivity based on one population to a qualitatively different population of subjects. What this finding may in fact suggest, is that impulsivity represents an individual difference dimension wherein its manifestations and the variables affecting it, differ across various populations.

Emphasizing the concept of impulsivity as an individual difference dimension, one possible explanation for this finding refers to the possibility that impulsivity and reflectivity as they are tapped by the RISC, represent domains apart from the types of behaviors necessary for adequate functioning on cognitive tasks such as the Metropolitan Achievement Tests. The fact that scores on both dimensions correlate significantly with teacher ratings of impulsivity suggests that the dimensions may be interpretable as being indicative of management or conduct problems which do not necessarily have to have aversive consequences for academic performance in all children. One method for examining this possibility would be to investigate the relationship between performance on the RISC impulsivity and reflectivity dimensions and the child's status on the Behavior Problem Checklist (Quay and Peterson, 1967). In particular, an examination of the relationship

between scores on both RISC dimensions, and placement on the Behavior Problem Checklist conduct problem dimension could potentially give support to the hypothesis that, at least for some children, impulsivity and reflectivity as measured by the RISC may reflect management/conduct problems not necessarily related to academic performance.

That body of psychological literature attempting to relate behavioral impulsivity and cognitive impulsivity as measured by Kagan's Matching Familiar Figures Test (Kagan et al., 1964) suggests another possible explanation for this finding. A number of investigators have examined the relationship between these two variables (e.g., Ault, Crawford and Jeffrey, 1972; Bentler and McClain, 1976; Bjorklund and Butter, 1973; Nadeau, 1968). In general, the results of these investigations have suggested that cognitive impulsivity, at least as it is measured by the Matching Familiar Figures Test was not related to a broader, more generalized tendency towards impulsive behavior. While these results are not conclusive, particularly because of methodological problems with the Matching Familiar Figures Test, and more generalized problems with the impulsivity/reflectivity cognitive style dimension, they do suggest that it is possible for a child to be behaviorally impulsive but not cognitively impulsive, or vice versa. To the extent that, as Kagan and his associates have maintained, cognitive impulsivity relates to performance on cognitive

tasks, the outcome mentioned above could account for the present finding. In any case, a subsequent investigation using the RISC could begin to generate data to respond to this hypothesis by administering the RISC and the Matching Familiar Figures Test (and possibly the Behavior Problem Checklist) to a sufficiently large population of subjects, and then correlating the results.

There is yet a third possible explanation for these findings. It may be that the children included in this study were not very accurate self-reporters due to confusion with regards to how the items had to be responded to, or a lack of attention to item content. This possibility receives some support from an examination of those items included in the scale, which had both positive and negative forms. The correlation of comparable items yielded the expected significant negative correlation in only three instances out of six for the males, and in only two instances out of six for the females. Given Hirshfield's (1965) empirically supported contention that the use of a negative form of a normally positive item on the ISC does not significantly increase its cognitive complexity, one could hypothesize that these findings suggest a lack of attention to item content, a lack of motivation, or confusion. However, the magnitude of the factor loadings, and the overall consistency in the data, cast doubt upon this latter possibility.

A more plausible explanation, again related to the issue of accuracy in the subjects' self-reporting, relates to the possibility that there exists, a discrepancy between the childrens' perceptions of their own behavior, and others' perceptions of the childrens' behavior. That is, clinically, it is not uncommon to see a fair amount of dissonance between a child's self-reported behavior, and that of adults rating the child's behavior.

One method for testing out this possibility would be to administer the scale, in a subsequent study, not only to another sample of children, but also to their teachers. The teachers would be asked to complete the questionnaire based on how they felt the children would respond if their perceptions of their own behavior were objectively accurate. Additionally, the teachers could be asked to complete a versions of the RISC which would use the same items in terms of content, but which would assess the teachers' perceptions of the children's behavior.

In summary, the RISC was developed as a self-report instrument for measuring a broad dimension of impulsive behavior. The results of the present investigation yielded two behavioral dimensions, as measured by the RISC, for both males and females: an "impulsivity" dimension and a "reflectivity" dimension. While there are clear

implications for the use of such scales, much additional work is needed to replicate the findings of the present study, as well as to further refine both the impulsivity and reflectivity dimensions.

APPENDIX A
REVISED IMPULSIVITY SCALE FOR CHILDREN (RISC)

NAME _____

There will be fifty-four items on this questionnaire. Read each item to yourself, as I read it aloud. Then, using the scale to the right of each item, decide how often you engage in that particular behavior. A "1" means never, a "3" means sometimes, and a "5" means always. After you have decided upon your answer, circle the appropriate number, to the right of each item.

	<u>Never</u>		<u>Sometimes</u>		<u>Always</u>
*1. I don't think I am as happy as other people.	1	2	3	4	5
*2. I play hooky sometimes.	1	2	3	4	5
*3. I'm not known as a hard and steady worker.	1	2	3	4	5
***4. I like to show off in front of my friends.	1	2	3	4	5
****5. When I do my homework, I take my time to make sure that I do the best job that I can.	1	2	3	4	5
*6. I like to keep moving around.	1	2	3	4	5
***7. I don't like going to school.	1	2	3	4	5
***8. I like to bother other children at school.	1	2	3	4	5
****9. I usually have enough time to do everything I want to do everyday.	1	2	3	4	5
*10. I am restless.	1	2	3	4	5

	<u>Never</u>		<u>Sometimes</u>		<u>Always</u>
***11. I have trouble sitting still.	1	2	3	4	5
**12. I don't like being "it" when we play games of that sort.	1	2	3	4	5
**13. I don't like to shoot with bows and arrows.	1	2	3	4	5
****14. My school grades are important to me.	1	2	3	4	5
****15. I finish all of my homework before I go out to play.	1	2	3	4	5
***16. I don't like to tell on my friends when they misbehave.	1	2	3	4	5
****17. In school, I speak only when I am spoken to by the teacher.	1	2	3	4	5
*18. Whenever there is a fire-engine going someplace, I like to follow it.	1	2	3	4	5
*19. Sometimes, I can hardly stop from throwing snowballs at people I see walking by.	1	2	3	4	5
****20. I usually plan what I am going to do, before I do it.	1	2	3	4	5
***21. I get angry quickly.	1	2	3	4	5
***22. I often break things that belong to me and my friends.	1	2	3	4	5
*23. I like to wrestle and horse around.	1	2	3	4	5
*24. I like to just blow off steam.	1	2	3	4	5
*25. I'll try anything.	1	2	3	4	5

	<u>Never</u>		<u>Sometimes</u>		<u>Always</u>
*26. It's hard to stick to the rules if you're losing the game.	1	2	3	4	5
****27. I don't have to be reminded to do my chores at home.	1	2	3	4	5
*28. I often act on the spur of the moment, without stopping to think.	1	2	3	4	5
****29. I can read for half an hour or an hour without getting up from my seat.	1	2	3	4	5
*30. I must admit, I'm a pretty good talker.	1	2	3	4	5
*31. When things get quiet, I like to stir up a little fuss.	1	2	3	4	5
*32. My home life is not always happy.	1	2	3	4	5
***33. I don't like it when the teacher pays attention to other children and not me.	1	2	3	4	5
*34. I don't think you should always have to do what you are told.	1	2	3	4	5
*35. I like to go with lots of other kids, not just one.	1	2	3	4	5
***36. I get so angry sometimes, that I want to kick, scream, and throw things.	1	2	3	4	5
*37. I get into tricks at Halloween.	1	2	3	4	5
*38. I like to dare kids to do things.	1	2	3	4	5
****39. In class, I make sure I know the answer before I raise my hand to answer a question.	1	2	3	4	5

	<u>Never</u>		<u>Sometimes</u>		<u>Always</u>
*40. I like throwing stones at targets.	1	2	3	4	5
*41. I usually say the first thing that comes into my head.	1	2	3	4	5
*42. I like being "it" when we play games of that sort.	1	2	3	4	5
**43. I never play "hooky".	1	2	3	4	5
**44. I am not restless.	1	2	3	4	5
*45. I make friends quickly.	1	2	3	4	5
***46. I don't like to listen to the teacher when she tells me what to do.	1	2	3	4	5
*47. I like to shoot with bows and arrows.	1	2	3	4	5
**48. I think I am as happy as other people.	1	2	3	4	5
****49. I go to bed without being told that I have to.	1	2	3	4	5
****50. When I have to, I take turns at school.	1	2	3	4	5
*51. It's fun to push people off the edge, into the pool.	1	2	3	4	5
****52. I keep my room at home, neat and clean.	1	2	3	4	5
***53. I use words that my parents say I shouldn't use.	1	2	3	4	5
**54. I don't like to dare kids to do things.	1	2	3	4	5

-
- * Items from the original Impulsivity Scale for Children (ISC).
 - ** Behavioral self-control marker items.
 - *** Conduct problem marker items.
 - **** Market items keyed in the negative.

IMPULSIVITY SCALE FOR CHILDREN

Name _____

There will be twenty-five items on this questionnaire. Read each item to yourself as I read it aloud. Then, decide whether it is true about you or false about you. If it is true or mostly true, circle the "T"; if it is false or not usually true about you, then circle the "F".

- | | | | |
|-----|-------------------------------------------------------------------------------------|---|---|
| 1. | I like to dare kids to do things. | T | F |
| 2. | I am restless. | T | F |
| 3. | I play hooky sometimes. | T | F |
| 4. | I like to wrestle and horse around. | T | F |
| 5. | I must admit, I'm a pretty good talker. | T | F |
| 6. | I like to shoot with bows and arrows. | T | F |
| 7. | I like throwing stones at targets. | T | F |
| 8. | My home life is not always happy. | T | F |
| 9. | When things get quiet, I like to stir up
a little fuss. | T | F |
| 10. | I make friends quickly. | T | F |
| 11. | I like to just blow off steam. | T | F |
| 12. | I don't think I am as happy as other people. | T | F |
| 13. | I'll try anything. | T | F |
| 14. | I'm not known as a hard and steady worker. | T | F |
| 15. | It's fun to push people off the edge, into
the pool. | T | F |
| 16. | Sometimes, I can hardly stop from throwing
snowballs at people I see walking by. | T | F |
| 17. | I usually say the first thing that comes into
my head. | T | F |

- | | | | |
|-----|--------------------------------------------------------------------------|---|---|
| 18. | I like to keep moving around. | T | F |
| 19. | I like to go with lots of other kids,
not just one. | T | F |
| 20. | I don't think you should always have to do
what you are told. | T | F |
| 21. | I get into tricks at halloween. | T | F |
| 22. | I often act on the spur of the moment,
without stopping to think. | T | F |
| 23. | It's hard to stick to the rules, if you're
losing the game. | T | F |
| 24. | I like being "it", when we play games
of that sort. | T | F |
| 25. | Whenever there is a fire engine going
someplace, I like to follow it. | T | F |

APPENDIX B
TEACHER RATING SCALE FOR IMPULSIVITY

DATE: _____

TEACHER'S NAME: _____

Impulsivity in children is the tendency of a child to respond quickly and without reflection or delay, to be restless, to indulge in horse-play, lose control of his feelings, break the rules, enter activities with overwhelming vigor, and generally to lose control in acceptable or unacceptable ways.

Using the scale below, rate each child listed in terms of the degree to which his/her everyday classroom behavior reflects impulsivity as it is defined above.

Child's Name:	Not at all impulsive										Extremely impulsive
1.	1	2	3	4	5	6	7	8	9	10	11
2.	1	2	3	4	5	6	7	8	9	10	11
3.	1	2	3	4	5	6	7	8	9	10	11
4.	1	2	3	4	5	6	7	8	9	10	11
5.	1	2	3	4	5	6	7	8	9	10	11
6.	1	2	3	4	5	6	7	8	9	10	11
7.	1	2	3	4	5	6	7	8	9	10	11
8.	1	2	3	4	5	6	7	8	9	10	11
9.	1	2	3	4	5	6	7	8	9	10	11
10.	1	2	3	4	5	6	7	8	9	10	11
11.	1	2	3	4	5	6	7	8	9	10	11
12.	1	2	3	4	5	6	7	8	9	10	11
13.	1	2	3	4	5	6	7	8	9	10	11
14.	1	2	3	4	5	6	7	8	9	10	11
15.	1	2	3	4	5	6	7	8	9	10	11
16.	1	2	3	4	5	6	7	8	9	10	11
17.	1	2	3	4	5	6	7	8	9	10	11
18.	1	2	3	4	5	6	7	8	9	10	11
19.	1	2	3	4	5	6	7	8	9	10	11
20.	1	2	3	4	5	6	7	8	9	10	11

APPENDIX C
FACTOR MATRICES FOR MALES AND FEMALES

Factor Pattern For Males

<u>Item #</u>	<u>Factor 1</u>	<u>Factor 2</u>	<u>Factor 3</u>	<u>Factor 4</u>	<u>Factor 5</u>
1	-0.02174	0.04875	0.47510	0.04602	0.00751
2	0.26010	-0.00859	0.08655	-0.25755	-0.06270
3	0.11762	0.08017	0.37175	-0.21757	0.07228
4	0.24038	-0.24888	-0.10774	0.13047	-0.02529
5	-0.00253	0.50008	-0.02558	0.02297	0.03539
6	0.43490	0.01690	-0.00160	0.13434	-0.03269
7	-0.13078	-0.19421	0.05836	-0.08483	-0.32717
8	0.26286	-0.42288	0.09428	-0.12127	-0.02616
9	0.00039	0.29109	-0.22662	0.04382	0.09067
10	0.49112	-0.03184	0.14706	0.11250	0.09450
11	0.46231	-0.03068	0.25531	0.08362	0.15493
12	0.06102	-0.11236	-0.00551	0.03489	-0.09116
13	0.11216	0.05513	-0.02528	-0.21775	0.42177
14	0.02005	0.33296	0.03745	-0.13913	-0.03135
15	-0.15365	0.51213	0.14181	-0.02094	0.04737
16	0.02974	-0.15976	0.01960	0.44739	-0.06134
17	-0.22714	0.40387	0.15824	0.09380	-0.01848
18	0.29160	-0.00344	-0.10436	-0.14209	-0.38111
19	0.17188	0.15306	0.17556	-0.02634	-0.39621
20	0.05636	0.50440	-0.19497	0.10535	0.01228
21	0.33172	-0.21581	0.08082	-0.19006	0.34984
22	0.20251	0.26601	0.06989	0.02925	0.06996

<u>Item #</u>	<u>Factor 1</u>	<u>Factor 2</u>	<u>Factor 3</u>	<u>Factor 4</u>	<u>Factor 5</u>
23	0.53136	-0.09763	-0.09488	-0.01852	-0.06259
24	0.48098	0.01455	-0.05593	0.07640	-0.01506
25	0.33423	-0.05066	0.01142	0.04504	-0.17866
26	0.36732	-0.06618	0.12873	-0.18250	-0.03761
27	0.07419	-0.02083	-0.15589	-0.17855	0.06318
28	0.32436	-0.10206	-0.01714	-0.07890	0.05960
29	-0.04434	0.13231	-0.10958	0.30207	0.08051
30	0.42219	0.06903	-0.08074	-0.11046	-0.01078
31	0.37587	-0.23135	-0.03494	-0.19968	-0.23199
32	-0.00853	-0.15921	0.33270	0.33198	-0.04522
33	0.19610	-0.02988	0.27329	-0.03452	0.10450
34	0.06216	0.02197	0.34858	-0.03398	-0.13750
35	0.30899	0.06324	0.14775	0.04947	-0.09109
36	0.45583	-0.05452	0.00868	-0.07544	-0.10362
37	0.19202	0.05881	0.04166	-0.19690	-0.50649
38	0.42293	-0.10468	-0.06467	-0.21613	-0.27185
39	0.02145	0.32615	0.05805	0.18946	0.09677
40	0.35151	-0.05585	-0.08420	-0.08516	-0.07119
41	0.40296	-0.03045	0.02161	-0.05601	0.00320
42	-0.06027	0.04107	-0.16050	0.08953	0.11320
43	0.03116	-0.24630	-0.47267	0.33403	-0.02472
44	0.02809	-0.01589	0.04490	0.05349	-0.06839
45	0.11630	0.31775	-0.18037	-0.11379	-0.24970
46	-0.07761	-0.18657	0.05459	-0.39604	0.14786
47	0.03712	-0.02814	-0.07711	0.03280	-0.16639
48	0.09015	0.24435	-0.54022	-0.03480	-0.09972
49	-0.00284	0.43911	0.06776	0.04405	0.06587
50	-0.04304	0.31530	-0.07724	0.30707	0.13467
51	0.20514	-0.14024	-0.05028	-0.28720	-0.38801

<u>Item #</u>	<u>Factor 1</u>	<u>Factor 2</u>	<u>Factor 3</u>	<u>Factor 4</u>	<u>Factor 5</u>
52	-0.16499	0.46950	-0.01631	-0.08206	-0.03659
53	0.24174	-0.15164	-0.07950	-0.10096	-0.25445
54	-0.01298	0.00314	-0.07939	0.30777	0.08433

Factor Structure for Males

<u>Item #</u>	<u>Factor 1</u>	<u>Factor 2</u>	<u>Factor 3</u>	<u>Factor 4</u>	<u>Factor 5</u>
1	0.00063	0.01378	0.46640	0.03440	0.01996
2	0.33975	-0.11673	0.12446	-0.31892	-0.14421
3	0.15824	0.00799	0.38453	-0.24794	0.03889
4	0.28330	-0.30700	-0.06494	0.07067	-0.10941
5	-0.16803	0.50925	-0.07423	0.05339	0.10496
6	0.41018	-0.11019	0.03569	0.04409	-0.12914
7	0.03111	-0.20926	0.06846	-0.09093	-0.32668
8	0.43015	-0.52036	0.16597	-0.20316	-0.15580
9	-0.14093	0.32696	-0.25631	0.07401	0.13362
10	0.46924	-0.17382	0.19494	0.00998	-0.02442
11	0.44212	-0.16767	0.30102	-0.01356	0.04094
12	0.10932	-0.14051	0.01035	0.01097	-0.11914
13	0.03398	0.06923	-0.01239	-0.21073	0.38827
14	-0.03943	0.31178	0.01376	-0.12892	-0.00018
15	-0.29971	0.54992	0.07840	0.03511	0.15223
16	0.00282	-0.15490	0.01999	0.42818	-0.06265
17	-0.34649	0.45932	0.09330	0.15442	0.09688
18	0.40497	-0.13969	-0.06685	-0.22142	-0.46161
19	0.24686	0.03027	0.18152	-0.08497	-0.42036
20	-0.13883	0.51327	-0.24125	0.12932	0.07386
21	0.35732	-0.28560	0.14087	-0.25126	0.22698
22	0.26600	-0.32219	0.11409	-0.02499	-0.01429

<u>Item #</u>	<u>Factor 1</u>	<u>Factor 2</u>	<u>Factor 3</u>	<u>Factor 4</u>	<u>Factor 5</u>
23	0.57012	-0.25692	-0.03066	-0.13276	-0.20720
24	0.45899	-0.12189	-0.01148	-0.02015	-0.12648
25	0.38527	-0.17332	-0.04920	-0.03771	-0.26501
26	0.44686	-0.20296	0.17982	-0.26888	-0.14883
27	0.08567	-0.02928	-0.13950	-0.18470	-0.03184
28	0.35465	-0.19358	0.02833	-0.14650	-0.03877
29	-0.17678	0.18289	-0.13916	0.32761	0.12845
30	0.41867	-0.05688	-0.03990	-0.19078	-0.11180
31	0.53952	-0.38232	0.03427	-0.30204	-0.36784
32	0.01588	-0.17650	0.33373	0.30903	-0.04569
33	0.21414	-0.10210	0.29691	-0.08089	0.04875
34	0.13178	-0.04992	0.35485	-0.06810	-0.15363
35	0.31736	-0.05274	0.17159	-0.02211	-0.15628
36	0.51398	-0.20959	0.06366	-0.17859	-0.22785
37	0.34370	-0.08131	0.06600	-0.26611	-0.55819
38	0.55888	-0.27316	-0.00180	-0.32265	-0.40308
39	-0.13282	0.33740	0.02127	0.20610	0.14687
40	0.39464	-0.16710	-0.03945	-0.16124	-0.17007
41	0.42496	-0.15550	0.06764	-0.14096	-0.10364
42	-0.13507	0.09430	-0.17466	0.11754	0.13988
43	-0.00563	-0.19642	-0.45956	0.33202	-0.04265
44	0.04326	-0.03489	0.04743	0.04084	-0.07436
45	0.08781	0.26031	-0.19281	-0.12884	-0.24165
46	0.02854	-0.16974	0.07960	-0.38314	0.11709
47	0.07192	-0.05262	-0.07119	0.01651	-0.17692
48	-0.00605	0.25319	-0.55228	-0.02464	-0.08849
49	-0.15246	0.44478	0.02385	0.06941	0.12815
50	-0.24125	0.37001	-0.12446	0.34416	0.20711

<u>Item #</u>	<u>Factor 1</u>	<u>Factor 2</u>	<u>Factor 3</u>	<u>Factor 4</u>	<u>Factor 5</u>
51	0.39636	-0.26443	-0.00272	-0.35870	-0.47490
52	-0.28115	0.51105	-0.07397	-0.02477	0.06231
53	0.36233	-0.25607	-0.03531	-0.17115	-0.34023
54	-0.10585	0.04231	-0.09382	0.31901	0.10734

Factor Pattern for Females

<u>Item #</u>	<u>Factor 1</u>	<u>Factor 2</u>	<u>Factor 3</u>	<u>Factor 4</u>	<u>Factor 5</u>
1	0.22870	-0.20494	0.07888	0.03035	-0.04825
2	-0.02815	0.02032	-0.24397	-0.01009	-0.08177
3	0.01363	-0.33632	-0.08022	-0.01897	0.06419
4	0.47484	0.19541	-0.03928	0.02818	0.02969
5	-0.01661	-0.15741	0.44032	0.34878	-0.14730
6	0.36791	-0.06327	0.07616	0.06403	0.05123
7	0.07200	0.06780	-0.15109	-0.11551	0.13544
8	0.30574	-0.14309	-0.10053	-0.12740	0.06352
9	0.02766	0.08821	0.10477	0.07710	0.14193
10	0.33825	-0.03231	0.08035	-0.20033	0.07644
11	0.48894	-0.04213	0.03491	0.00057	0.03334
12	0.11286	0.05195	0.04171	-0.18852	0.12794
13	-0.11029	0.29965	0.16941	-0.06370	0.18790
14	-0.01317	0.07723	0.16441	0.35234	-0.16462
15	-0.16870	-0.13633	0.42459	0.16490	-0.00067
16	0.09125	0.34882	-0.02760	-0.19549	0.15443
17	-0.19453	-0.19878	0.26432	-0.15730	0.09939
18	0.06282	-0.19936	-0.05332	-0.00173	0.25507
19	0.03846	-0.10152	0.02712	0.09804	0.50142
20	0.04985	-0.00983	0.45713	-0.02880	-0.08535
21	0.42109	-0.01846	0.00675	-0.17482	-0.06196

<u>Item #</u>	<u>Factor 1</u>	<u>Factor 2</u>	<u>Factor 3</u>	<u>Factor 4</u>	<u>Factor 5</u>
22	0.24004	-0.23041	-0.00367	-0.04469	0.16887
23	0.44995	0.10895	-0.18837	0.03524	0.26897
24	0.41075	0.12157	-0.00515	-0.02312	-0.00871
25	0.25270	0.08886	-0.29003	0.15000	0.10849
26	0.19763	-0.29771	-0.31339	0.02788	-0.00058
27	0.01658	-0.07086	-0.03879	0.11885	0.11606
28	0.30072	0.12232	-0.24378	-0.18321	0.16435
29	-0.00655	0.10841	0.44263	-0.06201	0.26955
30	0.39638	-0.01433	-0.32777	0.20070	-0.09225
31	0.36975	-0.08341	-0.45874	0.11980	0.13108
32	0.27889	-0.24774	0.04431	-0.34365	0.06823
33	0.25271	-0.06908	0.18417	-0.02737	-0.07742
34	0.06124	-0.36717	0.05573	-0.09626	0.24827
35	0.16315	-0.16305	0.04185	0.21717	-0.10134
36	0.32959	-0.14391	-0.10878	-0.01567	0.07271
37	-0.10587	-0.25296	-0.37035	0.02475	0.23111
38	0.11465	-0.09891	-0.45154	0.07546	0.20914
39	0.04470	0.18052	0.38456	0.06187	0.06836
40	0.03959	0.03773	0.07425	0.00321	0.58375
41	0.21285	-0.24037	-0.15579	-0.11641	0.06900
42	-0.10521	0.10749	0.12345	0.13844	0.16438
43	0.16601	0.58980	-0.07511	-0.02232	0.02092
44	0.02899	0.17892	-0.12364	0.19710	0.10805
45	0.02137	-0.09568	0.04449	0.45226	0.13365
46	0.16764	-0.33978	-0.10698	-0.12603	0.08866
47	-0.05027	0.14346	-0.00772	-0.21177	0.43337
48	-0.11510	0.22291	-0.07934	0.41454	0.05362
49	-0.12157	-0.09626	0.12953	0.06900	0.04075

<u>Item #</u>	<u>Factor 1</u>	<u>Factor 2</u>	<u>Factor 3</u>	<u>Factor 4</u>	<u>Factor 5</u>
50	0.06989	0.20827	0.27351	0.16287	0.06498
51	0.01391	-0.01532	-0.29909	-0.06231	0.46464
52	-0.14165	-0.22973	0.35125	0.17379	-0.15895
53	0.18993	0.03448	-0.35369	0.12509	0.28344
54	0.02922	0.42750	-0.00357	-0.02530	0.06866

Factor Structure for Females

<u>Item #</u>	<u>Factor 1</u>	<u>Factor 2</u>	<u>Factor 3</u>	<u>Factor 4</u>	<u>Factor 5</u>
1	0.22252	-0.23269	0.01801	0.00309	-0.02669
2	0.01139	-0.00167	-0.22350	-0.02748	-0.04732
3	0.09569	-0.33975	-0.12136	-0.04343	0.05284
4	0.46121	0.13162	-0.14227	-0.02743	0.15897
5	-0.17928	-0.11994	0.48993	0.39171	0.24363
6	0.36160	-0.10056	-0.02044	0.02219	0.11556
7	0.16305	-0.08247	-0.20675	-0.14549	0.17337
8	0.37981	-0.19196	-0.20874	-0.18231	0.10450
9	0.01278	0.10721	0.08968	0.08357	0.13670
10	0.36507	-0.07354	-0.03652	-0.23756	0.14307
11	0.49375	-0.10298	-0.09310	-0.06007	0.13518
12	0.14792	0.04301	-0.02071	-0.19979	0.15626
13	-0.14179	0.34056	0.18309	-0.02683	0.16233
14	-0.14461	0.09183	0.23425	0.37753	-0.19695
15	-0.27444	-0.07458	0.47161	0.22194	-0.12229
16	0.10988	0.33941	-0.06694	-0.19994	0.21356
17	-0.23526	-0.16657	0.29707	-0.11254	-0.19777
18	0.16090	-0.19098	-0.12474	-0.02940	0.26142
19	0.14717	-0.05944	-0.06036	0.07843	0.49480
20	-0.07625	0.01021	0.45498	0.01169	-0.14694

<u>Item #</u>	<u>Factor 1</u>	<u>Factor 2</u>	<u>Factor 3</u>	<u>Factor 4</u>	<u>Factor 5</u>
21	0.42948	-0.08697	-0.10473	-0.22520	0.03563
22	0.31596	-0.25104	-0.11121	-0.08823	0.20608
23	0.53782	0.05714	-0.32934	-0.04173	0.40905
24	0.39641	0.06390	-0.09704	-0.06933	0.09590
25	0.31757	0.04726	-0.34757	0.09098	0.21530
26	0.31093	-0.34942	-0.38161	-0.03884	0.06886
27	0.04730	-0.06184	-0.05513	0.10710	0.11695
28	0.40418	0.06910	-0.35248	-0.24883	0.28655
29	-0.06057	0.16296	0.40349	-0.02092	0.20814
30	0.43268	-0.09285	-0.39133	0.12162	0.04326
31	0.50802	-0.15309	-0.56459	0.02246	0.27791
32	0.35953	-0.28999	-0.08725	-0.38530	0.11323
33	0.20292	-0.09669	0.12683	-0.04117	-0.05444
34	0.16556	-0.35450	-0.03631	-0.11947	0.22558
35	0.12522	-0.18180	0.02694	0.19756	-0.09033
36	0.39408	-0.19151	-0.21341	-0.07461	0.15333
37	0.06860	-0.24691	-0.39826	-0.01457	0.24460
38	0.27643	-0.12877	-0.51305	0.00761	0.29690
39	-0.06582	0.21195	0.38261	0.09921	0.03043
40	0.14831	0.08632	-0.02526	-0.00168	0.58392
41	0.31349	-0.28000	-0.24855	-0.16922	0.12541
42	-0.12975	0.15018	0.14472	0.16329	0.12598
43	0.11194	0.56240	-0.07606	-0.02760	0.11979
44	0.03511	0.18217	-0.11497	0.18553	0.14377
45	-0.00207	-0.06641	0.05490	0.44661	0.11130
46	0.27546	-0.36831	-0.20037	-0.17291	0.11909
47	0.05658	0.17712	-0.07426	-0.21238	0.44075
48	-0.16495	0.25312	-0.00216	0.42828	0.04737

<u>Item #</u>	<u>Factor 1</u>	<u>Factor 2</u>	<u>Factor 3</u>	<u>Factor 4</u>	<u>Factor 5</u>
49	-0.13944	-0.06381	0.15211	0.09181	-0.01726
50	-0.03050	0.23147	0.27795	0.18741	0.05002
51	0.20208	-0.00420	-0.38381	-0.10643	0.51588
52	-0.25381	-0.18996	0.41061	0.22092	-0.27069
53	0.32046	0.00997	-0.43038	0.06074	0.38234
54	-0.00914	0.42794	0.00858	-0.01434	0.11180

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BIOGRAPHICAL SKETCH


Joel Cohen was born in New York City on June 23, 1952. He attended PS 69, and Joseph Pulitzer Junior High. From 1966-1969 he attended Newtown High School. He attended the State University of New York at Buffalo from 1969-1973, where he obtained a Bachelor of Arts degree. Mr. Cohen began graduate school at Northern Illinois University, in Dekalb, Illinois, from 1973-1976, when he received his master's degree in clinical psychology. He completed his clinical internship at the Shands Hospital, University of Florida, in 1978. He then transferred to the University of Florida clinical psychology program in order to complete his work towards receiving his doctoral degree. He hopes to receive his doctoral degree in August, 1979. Subsequently, he plans to accept a position as a staff psychologist at the newly opened Medical Center at the State University of New York at Stony Brook.

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.




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I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.



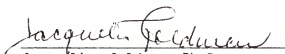
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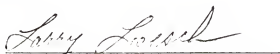


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